DEMETER

Demonstrating more efficient enzyme production to increase biogas yields

Summary

A recently developed enzyme has the potential to increase biogas yield by 10% or more. However, the current fermentation process does not yield enough to make it cost effective for industrial deployment.

The DEMETER project wants to increase this yield by at least 20%, making it far more cost effective and more easily available for widespread use. The project will improve and scale-up fermentation to improve protein yields while retaining quality using a number of techniques.

It will improve downstream processing of the fermentation broth, reducing costs by at least 15% and demonstrate industrial and economic the feasibility of the entire project using a 15,000 litre pilot plant. It will also develop a model that can predictive how adding the enzyme will impact biogas yield.

http://www.demeter-eu-project.eu

Type of Action: Innovation Action - Demonstration

Value Chain: Across VCs

Start date: 01 August 2016

End date: 31 July 2019

BBI JU contribution: € 4,629,586.00

Objectives

- To demonstrate a yield increase and cost reduction of the C1-LC4 enzyme production process as well as its positive effect on biogas production in Europe.
- To improve and scale-up the C1-LC4-producing fermentation process to yield at least 20% more protein while retaining quality.
- To improve downstream processing of the fermentation broth leading to a cost reduction of at least 15%.
- To demonstrate the improved production process in a 15 000 L pilot plant
- To demonstrate the industrial and economic feasibility to apply a cost-effective C1-LC4 enzyme product in biogas plants.
- To develop a predictive model of the effect of enzyme addition on the biogas yield of a given fermentation process.
- To analyse the impact of the developed processes and products on environment and economy.

Expected impacts

- Higher process yields of at least 20% compared to the state of the art
- Cost reduction of at least 15% compared to conventional down-stream processing of the fermentation broth
- Increasing the overall productivity leading to more economically feasible processes, to be proven at demonstration scale
- Contributing to realising the objectives of Key Enabling Biotechnology under Horizon 2020 and dedicated EU policy

Consortium

- Genencor International BV (The Netherlands)
- Bio Base Europe Pilot Plant Vzw (Belgium)
- MicVit (Germany)
- Deutsche Biomasseforschungszentrum (Germany)
- Organic Waste Systems NV (Belgium)
- Ciaotech Srl (Italy)
- Biomoer Energie (The Netherlands)

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Project coordination

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